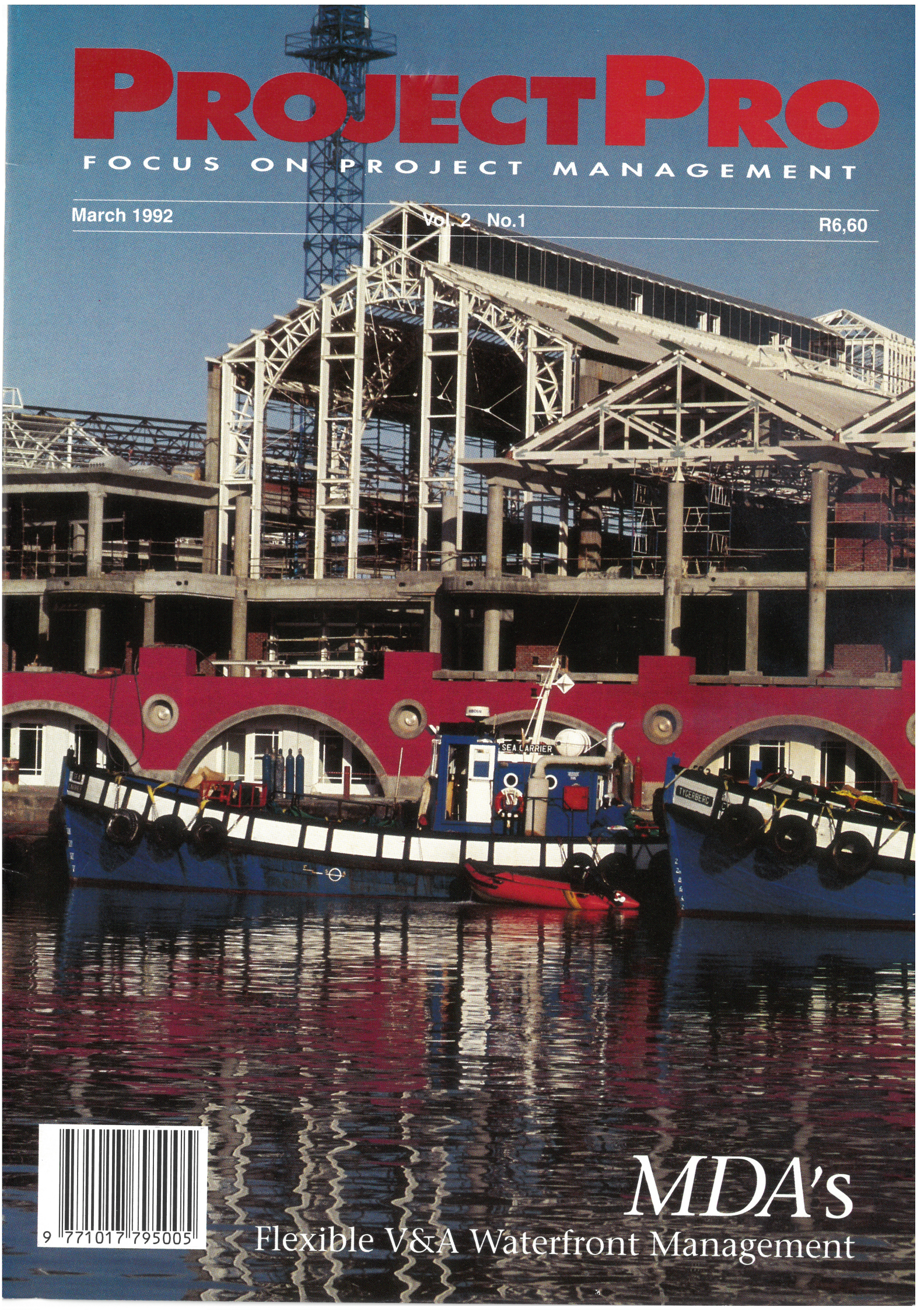
PROJECTPRO

FOCUS ON PROJECT MANAGEMENT

March 1992 Vol. 2 No.1 R6,60



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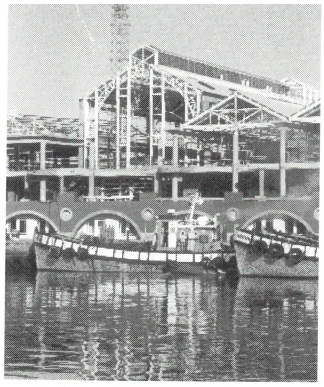

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COVER : Victoria & Alfred Waterfront.

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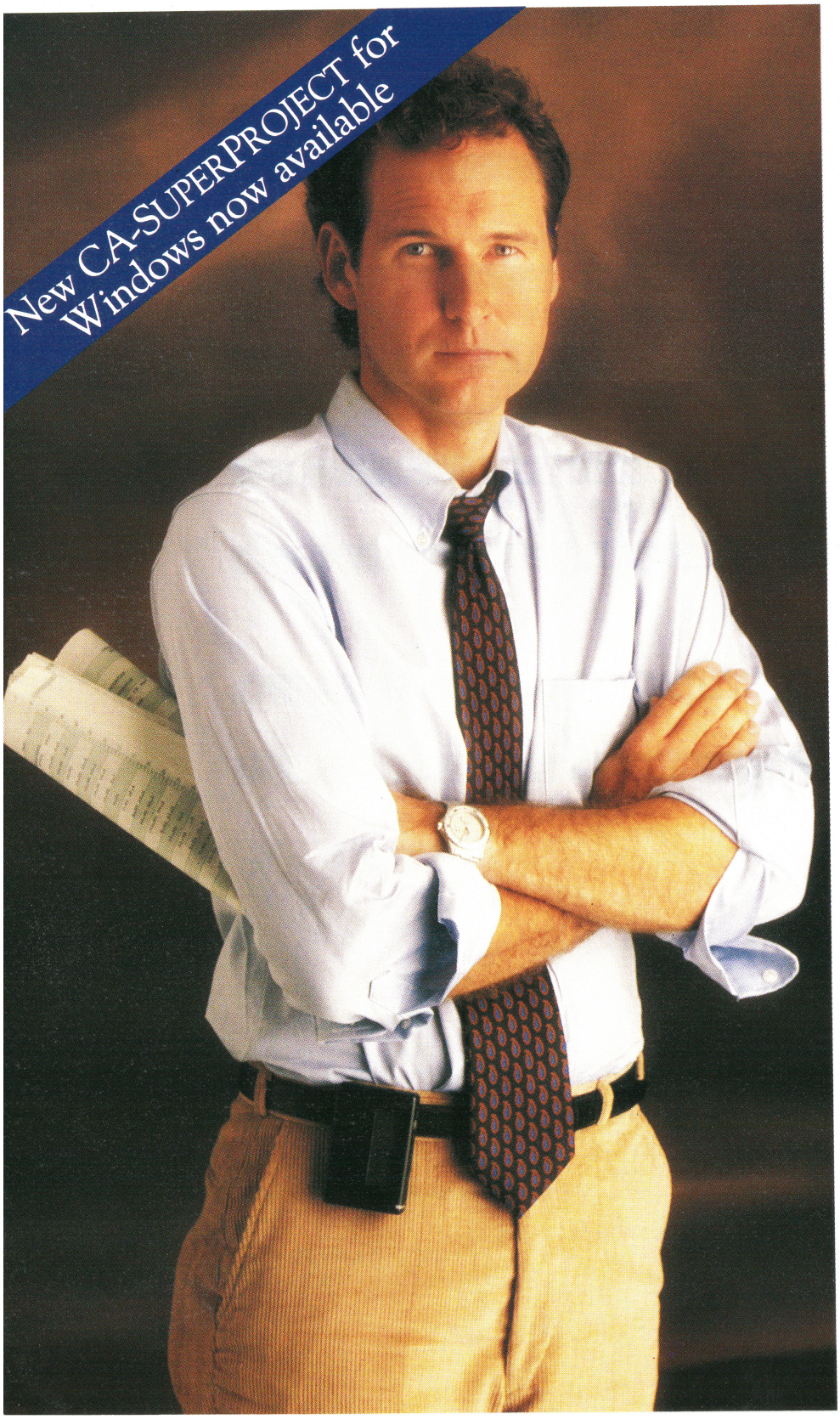

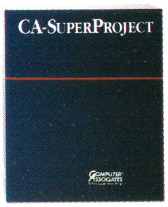

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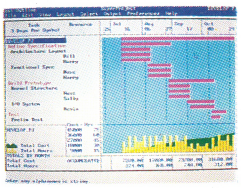

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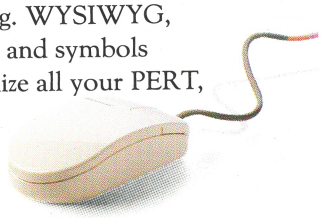

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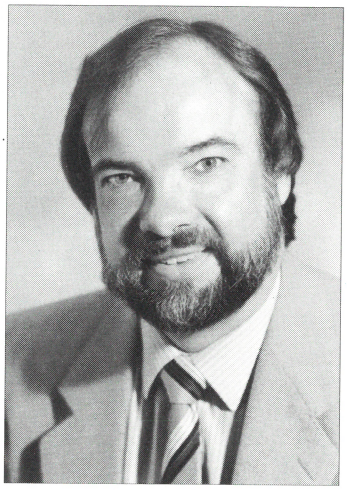


With sturdier limbs and brighter brain,
The old soul takes the roads again.
John Masefield

The once weary soul of the Cape Town docklands is undergoing a renaissance, as the Victoria and Alfred Waterfront project, whose objective it is to create a commercially viable business and recreational area within a working harbour, takes shape.

It is seldom that a physical development project of this magnitude is free from objection or dissatisfaction from one or the other source, and rare indeed to encounter a development which enjoys the unanimous and enthusiastic support of the public, private enterprise, local and government authorities, and environmentalists.

ProjectPro spent the festive season on the Waterfront researching our feature article for this issue. The harmonious and vibrant character of the restaurants, hotels and theatres seemed to be reflected in the attitude of the core consultants, project teams and other related persons that we interviewed.

The impact of this remarkable project has extended far beyond the boundaries of the Waterfront, giving impetus and thrust to the whole development initiative of Cape Town.

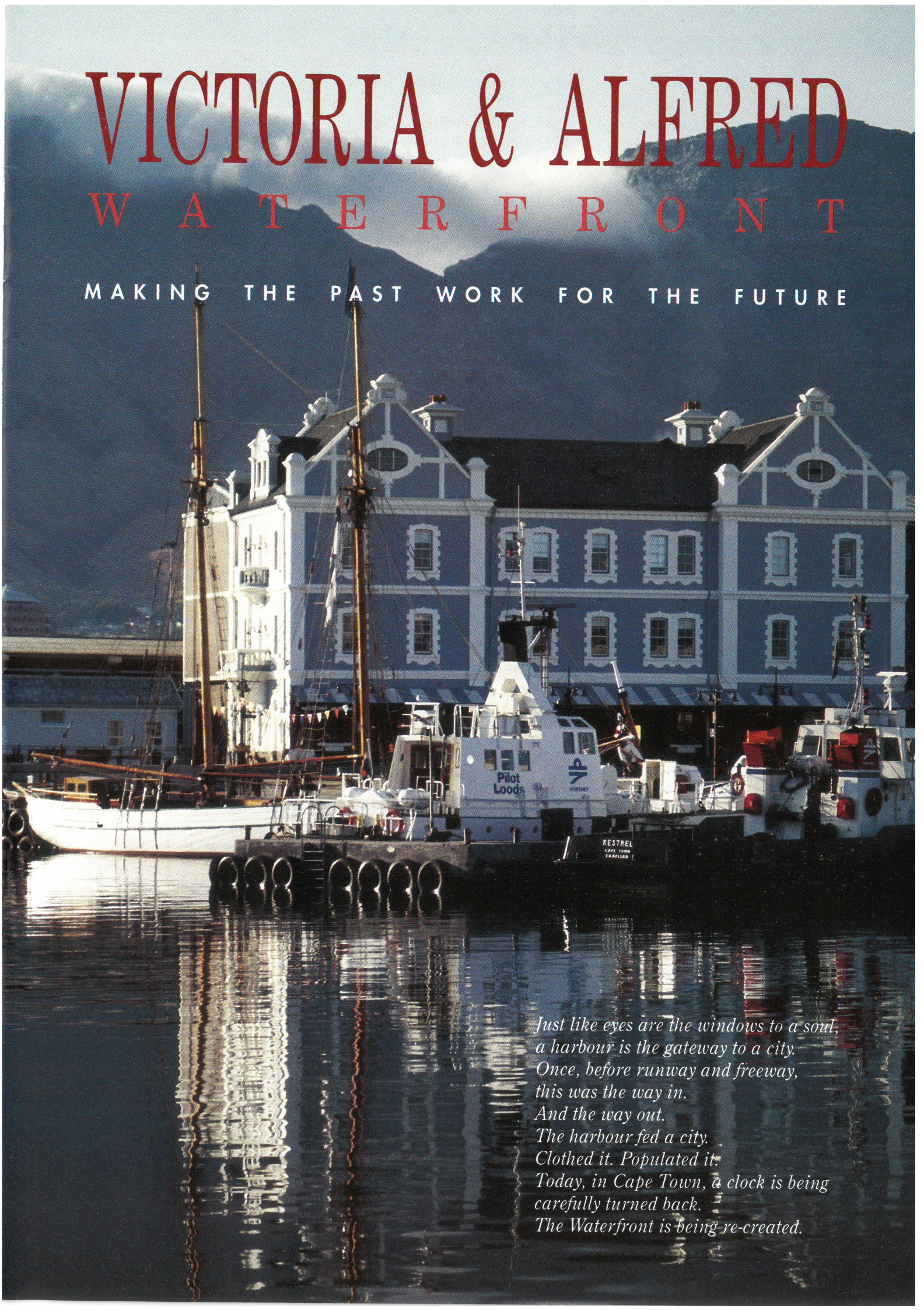
We trust that the developers, tenants and their staff realise that the Waterfront, just like any other project or product, has a life cycle – birth, growth, maturity, and ultimately a decline. No matter how much initial success is achieved, it will take the concerted effort of each and every individual involved in the project to ensure that the Waterfront remains a pleasant and exciting place to visit for many years to come.

Long live the Waterfront!

Terry Deacon
Managing Editor

VICTORIA & ALFRED
WATERFRONT

MAKING THE PAST WORK FOR THE FUTURE



Just like eyes are the windows to a soul,
a harbour is the gateway to a city.
Once, before runway and freeway,
this was the way in.
And the way out.
The harbour fed a city.
Clothed it. Populated it.
Today, in Cape Town, a clock is being
carefully turned back.
The Waterfront is being re-created.

An event took place in November 1988 which was to give Cape Town a major boost as one of the world's premier tourist venues. Arising from the recommendations of the Burggraaf Committee, Transnet established a private company, the Victoria and Alfred Waterfront (Pty) Ltd. Since it commenced in March 1989, the R2 billion Victoria and Alfred Waterfront (V&AW) project has been a flurry of activity, giving a new dimension to flexibility in property development, and a new dimension to Cape Town.

Early decisions

The first and foremost principle guiding V&AW (Pty) Ltd, was that the redevelopment of the old harbour must be commercially viable, which in turn depended on attracting sufficient visitors, particularly the local Capetonians in the off-season. Other key principles were that the Waterfront should be retained as a working harbour to create interest and activity, and that the existing historic buildings should be preserved and converted for new use.

The development strategy at V&AW was to "start small, in the biggest possible way". The idea was to start with a core area, such as the Pierhead, and to expand into adjacent areas once that was completed - like a town growing organically. The V&AW developers invested all they could into the Pierhead to set a high standard for other private developers who would continue the expansion.

A team of core consultants was astutely chosen by David Jack, Managing Director of V&AW (Pty) Ltd and his directors. This resulted in the harmonious relationships between team members which has characterised this project. The decision to adopt a project management approach has reinforced the smooth running of this R2 billion mega-project, which will continue into the 21st century.

Project management

Mitchell DuPlessis Associates (MDA), are Project Consultants to the V&AW, and have the task of:

- Optimising, managing and controlling cost and time across the entire development;
- interfacing with core consultants in arranging development rights, development strategy and expenditure control;
- and interfacing with the various project teams from planning to handover on each of the development projects.

Geoff Starke

Says Geoff Starke, MDA's Project Co-ordinator and Time Manager, "We get involved at various levels, from strategic and logistical planning, right down to how the paving stones of one contract will interface with another. As project managers we report to the client, independently of the project teams. We don't interfere in the traditional way of running a contract. For instance, the architect, or engineer, retains the role as principle agent. Our job is to focus the project team on the specifics of that project, to standardise the reporting, certifications and handovers, and to ensure that they are dealing with the peripheral issues correctly".

Time & cost management

The essence of time management is the setting of achievable goals; the scheduling of activities and their prioritised interrelationships; and the regular updating of the programme to reflect the emerging achievements.

MDA have computerised the process on the Open Plan software package. The open architecture and interactive nature of this package permits tailoring of the reporting to suit the individual circumstances of the project.

MDA have developed an in-house cost reporting system based on the Framework III software package. This is aimed at presenting assured and current data to management to regularly inform them of the status of capital expenditure and the anticipated cash flow. The project income and returns are also reflected.

Some 500 compound cost centres have been incorporated to date, and the report covers current and future expenditure over a period of 10 to 15 years. Says David Jack, Managing Director of V&AW, "MDA's monthly project report provides the information that enables management to focus on key aspects and has given the project its financial credibility".

Flexibility is paramount

Project management is essentially the management of change. The change on this project is a combination of retaining the historical values and simultaneously upgrading and modernising the infrastructure and buildings, with the objective of realising optimum residual values for the properties.

At V&AW, many interesting situations occur, for example the retention of the old North Quay warehouse building while being converted to serve as an hotel and retail arcade. This took place while the original tenant was still occupying the building.

The major challenge is to retain flexibility in the planning in order to accommodate new ideas which improve the whole development. In this way inputs from the private sector can be accommodated. For example, at a very late stage in 1991, a proposal for a new City Lodge Hotel was considered, and the best area was found to be the Amsterdam Battery precinct, lying adjacent to the proposed canal link to the city. V&AW had made a policy decision to build the canal up to their southern boundary, but at this stage there is no commitment from the Cape Town City Council or any other organisation to continue the canal through to the terminus at the Imperial Cold Storage (ICS) and old power station sites.

The canal is certainly feasible and desirable. There are existing pipes at ICS which could be used to pump "fresh" sea water into the head of the canal to avoid stagnation. However,


The latest ideas for the Waterfront
1. Granger Bay
2. Yacht Marina
3. Elbow
4. Victoria Basin
5. Victoria Wharf
6. UCT Business School
7. Portswood Ridge
8. Pierhead Precinct
9. Alfred Basin
10. Bertie's Landing
11. Proposed Signal Hill Cableway Station
12. New Basin
13. Alfred Marina
14. Duncan Dock
15. Amsterdam Battery
16. Proposed City Lodge Hotel
17. Old Power Station & ICS Site

the section beyond the V&AW boundary presented a problem. The crossing of the eastern bypass freeway had to provide sufficient headroom for the canal, without causing excessive excavation or deviations of existing services. This could cost an extra R7 million, and the question is, who should pay?

Neill Bernstein, MD of Devland who upgraded the ICS site says, "The only way to ensure the vital canal link between the City and the Waterfront would be through joint participation of the Cape Town City Council, Devland and the V&AW".

Urban planning

Gallagher Prinsloo & Associates (GPA), urban planners, had the task of developing a planning framework which would enable the realisation of optimum land values. This was achieved by using a sophisticated computerised urban planning model which enabled comparative residual land values to be investigated through a range of planning scenarios. In addition, GPA have an ongoing advisory function in assessing proposals by others so as to ensure compatibility with the urban planning concept.

Glen Gallagher, Director of GPA, observes, "We decided at an early stage to get the public to participate in developing ideas for V&AW, and to work very closely with the various bodies in Cape Town. Before work started, we arranged a seminar in the City Council's offices to give all those people who had made proposals for the Waterfront over the past 10 or 20 years an opportunity to present their ideas. The members of the V&AW core consultants just listened and asked questions. We then examined all the ideas and incorporated many of those with merit into our own proposals. One of the ideas to be incorporated, was the canal link to the city".

Package of plans

A unique aspect of the V&AW project was the short time required for achieving approval of changes in land use, and the flexibility of implementation of the development rights. This resulted from the unusual circumstances of the land being essentially State owned and its use controlled by special legislation concerning the privatising of the South African Transport Services.

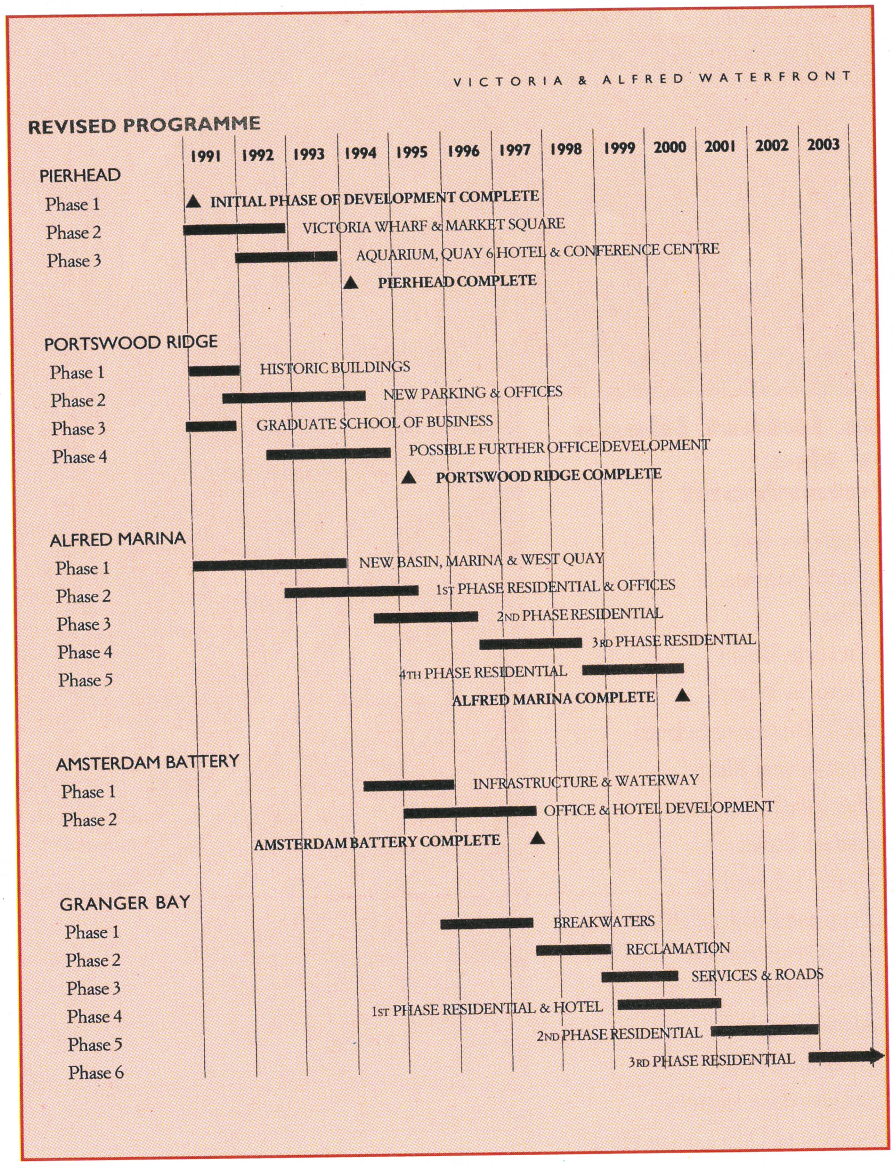
A concept, now known as the 'Package of Plans" process, was developed in collaboration with the Cape Town City Council, which has enabled changes in land use to be properly regulated through a gradual process within a development framework while incorporating public comments at all stages. The approved development framework establishes the overall rights and conveys the urban design intentions. It permits flexibility in the detail as each of the stages are developed, i.e. at precinct level, site development level and finally the actual individual building plans.

The achievements to date in land use changes, physical development and use by the public have been attained in a time scale that is unheard of under existing land use legislation.

All new buildings, and any modifications to existing buildings, must reflect the traditional architecture of the Cape. Gallagher explains, "The feeling of the buildings around the docks should echo the harbour architecture, while the proposed residential development around the new basin near the city should reflect the Cape architecture of Waterkant Street and other narrow streets higher up towards the mountain".

Victoria Wharf – the first new building

No major new buildings have been erected on the Pierhead until recently. The first new building will be the R80 million Victoria Wharf retail complex, scheduled for completion in November 1992. The existing King's Warehouse is to be incorporated into the new Victoria Wharf complex. It will be converted



and serve as a foyer for the 11 cinemas and accommodate a produce market.

Victoria Wharf, being constructed by Ovcon Cape Building, is a two-storey building, 45 000 sq m in total floor area (25 000 sq m lettable), which includes 178 retail outlets, 12 restaurants, and a large underground parking garage near the western corner of Victoria Basin.

On the one hand reservations have been expressed that the complex is too large in scale, compared to the rest of the development, but on the other hand the building has also won an award from the Institute of Architects. Only time, and public acceptance, will tell whether Victoria Wharf is going to fit in with the rest of the Waterfront.

Services can be a headache

There are bound to be headaches and surprises on a project which must take cognisance of existing services which could have been laid up to 130 years ago when the Alfred Dock was constructed. The Victoria Dock was built 90 years ago.

Peter Heydenrych, a Director of Hill Kaplan Scott Inc, who is responsible for the services infrastructure design, says, "The as-built plans from the Harbour Engineer were helpful, but unfortunately drawn in old fashioned imperial units and scales. It was decided to map the whole area and feed it into a Computer Aided Design (CAD) system. There was a lot of interfacing to be done between the client, planners, project managers, architects, landscape architects, and the City Council who will ultimately take over all the systems".

The surprise came when the contractors started work and discovered that in places there were up to three times more services in the ground than expected. Says Heydenrych, "Many of the services were obsolete, but one could not know whether a cable or a pipe was live or not. Because most of the excavation was in rock, there was plenty of blasting being done in a built-up area. Most of the old sewerage pipelines had to be replaced to cope with the increased flows. The water pipes were adequate in size, but their joints were the old fashioned lead caulked type, so they also had to be replaced".

Another surprise was to discover that someone had illegally tapped into a Portnet pipeline for a free supply of diesel!

6 million visitors confirm success

Nothing succeeds like success. The V&AW has received about 6 million visitors since it opened its doors in December 1990, which makes it South Africa's top tourist attraction. The V&AW team will surely not rest on their laurels, but will continue to put every effort into keeping the Waterfront an exciting place to visit for decades to come.

In conclusion, and in the words of Neville Riley, City Planner of Cape Town, "The impact of the V&AW development on Cape Town is dramatic, very good, and its the best thing that's happened to us in the last four or five decades in terms of giving impetus and thrust to the whole development initiative of the City".

CORE ARCHITECTURAL & ENGINEERING CONSULTANTS

Urban Design: Gallagher, Prinsloo & Associates

Urban Cost Modelling: Walker Mare

Planning Co-ordinators: MLH Architects & Planners

Project Managers: Mitchell DuPlessis Associates

Contract Legal Consultants: Philip Loots & Associates

Transportation & Road Infrastructure: Hawkins, Hawkins and Osborn

Services Infrastructure: Hill Kaplan Scott

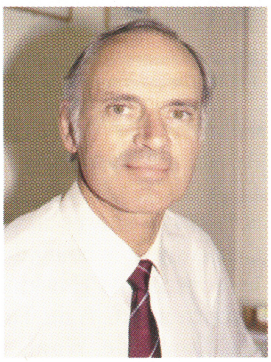
Marine & Hydrological: Kapp Prestedge Retief

Landscape Architects: Waterfront Landscape Architects

Land Surveyors: Groenewald, Turner and Wynne

SIGNAL HILL CABLEWAY

It is rare for all aspects of a major project to be as favourably received as the Victoria and Alfred Waterfront development. However the smooth ride may be over.

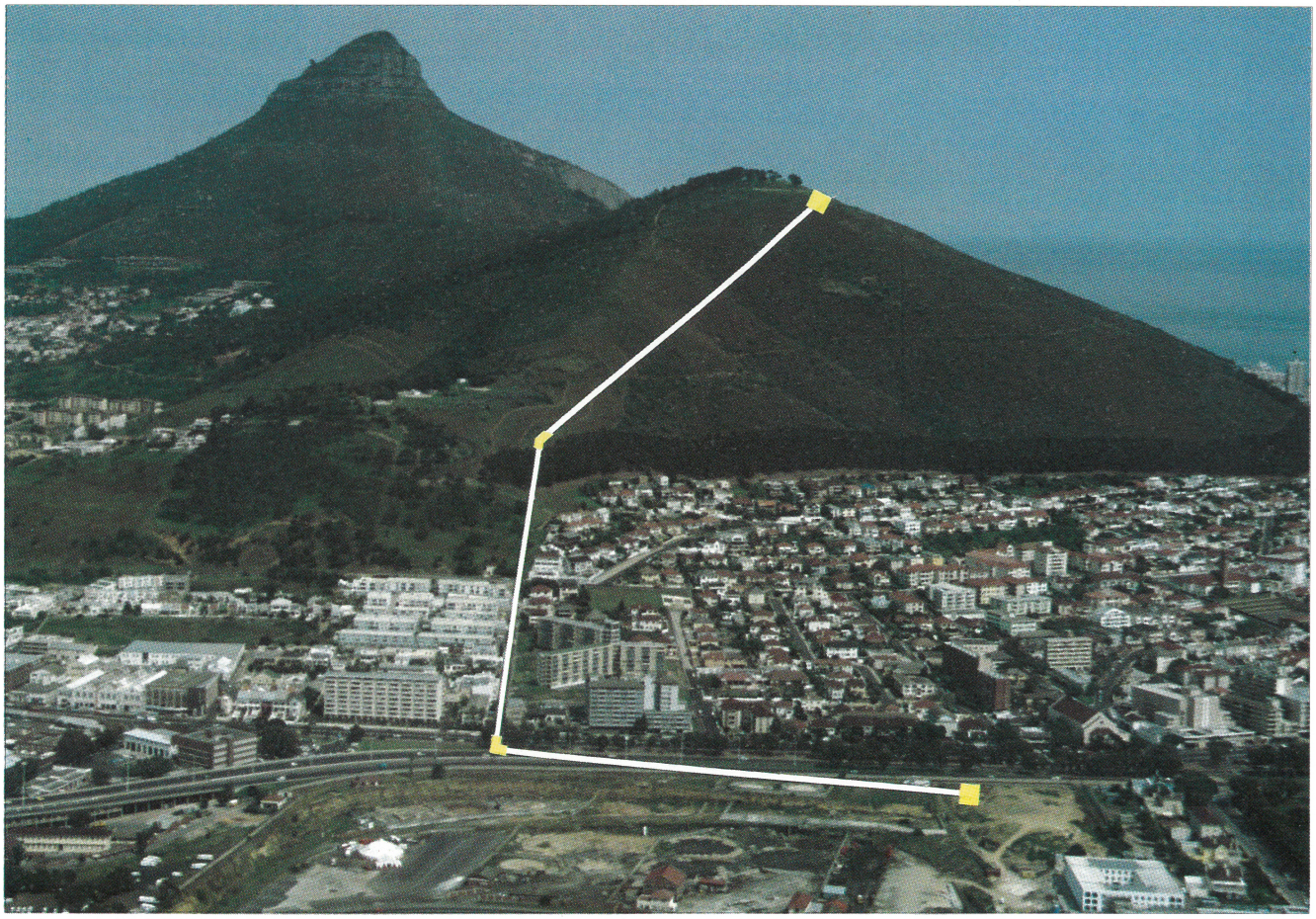


Louis de Waal

In November 1991, it was announced that a R50 million cableway was proposed to link the V&AW with the summit of Signal Hill. The lower cableway station is to be built on the south-western end of Portswood Ridge, and the upper station on the summit of Signal Hill. The latter will comprise restaurants, parking and toilet facilities, an environmental centre and walkways for tourists. There will be 50 enclosed gondolas on a single-haul cable, supported on pylons at approximately 100 m intervals over its entire length of 1,5 km.

Relieve Table Mountain pressure

The project will be developed and



The proposed route of Cape Town's controversial Signal Hill Cableway.

operated by the Table Mountain Aerial Cableway Company (TMACC), who will hold just over 50% of the shares in the Signal Hill Cableway. It is being designed jointly by consultants Hawkins, Hawkins & Osborn and C A du Toit & Partners. Mr Louis de Waal, the TMACC Deputy Chairman, says "The development on Signal Hill should take some of the pressure off Table Mountain. We also intend to reconstruct the old signal station, and will possibly install footpaths to the historical blockhouses and the noonday gun, but most importantly, to do as much as we can to improve the environment".

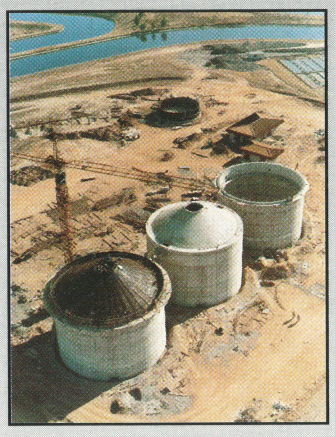
Residents object

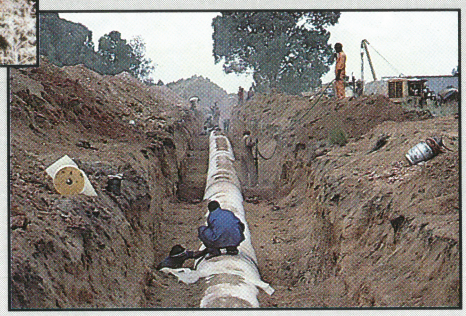
The initial ascent of the cableway is via the 300 m long Boundary Road, situated in the residential area of Green Point, and there lies the rub! Residents fear an invasion of their privacy as up to 1000 passengers an hour pass overhead, and they also expect a possible drop in property values. They intend voicing their official disapproval when the City Council calls for objections in the first half of 1992.

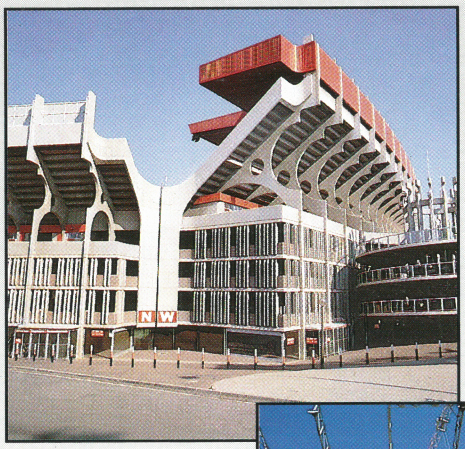
Apart from the residents, the scheme has generally been favourably received by local authorities, government representatives and provincial and environmental bodies. Says Louis de Waal, "We presented our ideas to a wide range of decision-makers, from the local authorities to environmental groups, in order to get feedback before announcing the project to the media. Right from the first paying passenger we intend taking a portion of the ticket price and put it into a dedicated environmental fund for the Table Mountain chain, which the City Council or a Trust should administer."

A shuttle service is also being planned between the proposed Signal Hill cableway and the existing Table Mountain cableway, and this exciting idea could provide a spectacular return journey on one ticket. PP

CREATIVE ENGINEERING FOR A BETTER FUTURE







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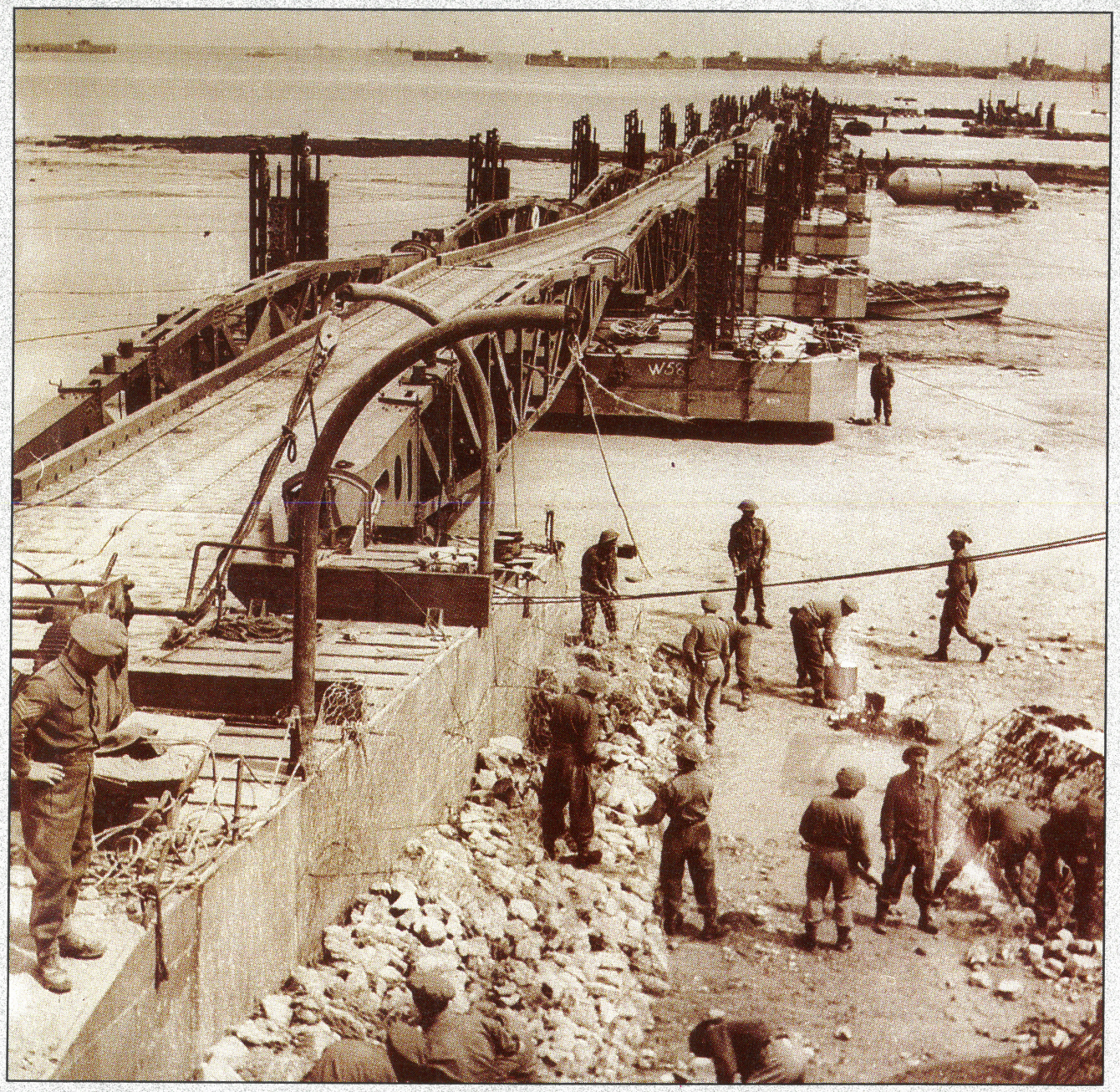
THE CHALLENGE



Two 6.5sq km ports, manufactured in sections in Britain, were towed across the Channel and landed off the Normandy coast to assist in troop supplies

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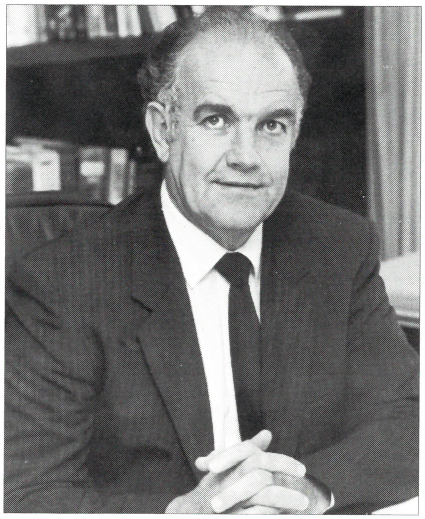
A VISION
for Sasol & South Africa

Jan Fourie

Since it was founded in 1950, Sasol Limited has become a giant in the world of synthetic fuels and chemicals. ProjectPro interviewed Jan Fourie, the General Manager of their Sastech division, to hear his views on the Sasol organisation and their future in the new South Africa.



A recent exposé in the media has accused the government of pumping billions of rands into protectionist measures and subsidies to make Sasol appear to be a very successful company. What is Sasol's reaction to these allegations?

Sasol's response is that the article and editorial by Kevin Davie in *The Executive* were clearly written with the intention of harming Sasol and its stakeholders. The article is so malicious in its intent and so distorted in its content that it has been referred to the South African Media Council.

The writer ignored the factual information in his possession, and substituted unfounded allegations in its place, resulting in superficial, sensational and highly misleading reporting. He was clearly assisted or manipulated by an undisclosed source with its own agenda. This irresponsible reporting falsely leads shareholders and the public to believe that the Sasol group is not financially viable, or that the public is being exploited. The article has serious shortcomings in that comparisons are made of figures which are not comparable. The damage caused to Sasol's reputation by these false allegations now has to be rectified by Sasol at great cost.

The Executive article neglected to mention the group's massive contribution to South Africa. Sasol's R4 billion contribution to savings and earnings in foreign exchange and its huge contribution towards wealth creation, and direct and indirect job creation, have not been mentioned.

Moving on to less contentious subjects – what is Sasol's management and project management philosophy?

The key to successful projects is to have well trained engineers and project managers. The project team should be involved at an early stage so that they can grow with the project, which in turn promotes ownership and commitment. One must then give the team members sufficient authority for effective decision-making.

We believe in extensive up-front planning to optimise our designs, which saves time and money in the execution stage. This also puts us in a good position to request lump sum bids for engineering, procurement and construction, coupled with an incentive scheme for sharing any savings on the final cost. Innovative engineering is encouraged in this manner.

Lump sum contracts permit Sastech, our project management section, to concentrate on the quality and engineering integrity of the job, instead of being burdened with the excessive administration typical of a re-imbursable type of contract.

What is Sasol's strategy for adapting to the rapidly changing national and international scene?

Our philosophy is to diversify into chemicals with the objective of obtaining 50% of our income from energy and 50% from chemicals. Our strategy is to make money from the energy side of the business when the oil price is up, and on the chemicals side when the oil price is low.

We also want to be active in various international chemical market sectors, because a downturn in one sector could be offset by a boom in another. We are constructing an acrylic fibre plant in Durban, which will utilise our propylene derivatives. Further diversification is evident from our involvement in polymers and solvents, and there are also plans to go into resins.

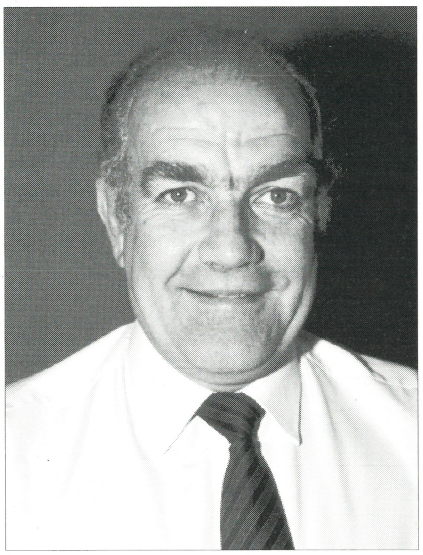
We will shortly be mining over 35 million tonnes of coal annually, but have never been in the export market. As we produce some of the cheapest coal in the world, we intend to become players in the coal export market, particularly now that Japan has lifted trade sanctions.

South Africa's relatively high inflation rate will probably cause our exchange rate to fall even lower than the current level. This does not bode well for SA, but it will make Sasol even more competitive on world markets.

What affirmative action is being undertaken by Sasol to prepare for the new South Africa?

In a high-tech company it is important to draw your top management from the ranks, so Sasol started a bursary scheme for blacks

about four years ago. Presently we have over 100 black students at various SA universities and numerous black chemists and engineers doing post-graduate studies. At Secunda, for example, we have 20 black, coloured and indian engineers, 40% of our maintenance artisans, and over 30% of our operators are black. We believe that we are well placed for the future.



What is being done to ensure that the vast industrial and mining complexes owned by Sasol do not harm the environment?

Protecting the environment is an obligation. We address the environmental issues as we would address finance or technology. A thorough environmental impact study is carried out on all our new projects, and for our existing plants we are spending at least R100 million in cleaning up Sasolburg, particularly the hydrogen sulphide. The biggest hurdle at the moment, however, is to find suitable technology.

What new Sasol projects are in the pipeline for South Africa?

Presently Sasol has projects to the value of R3 billion under way, and we are planning to spend another R2 billion. The planned projects include "greenfield" installations and extensions to plants for coal exports and the production of ascetic acid, alkyl amines (explosives and pesticides), acrylo nitrile (fibres), bisphenol A and acrylic acid. In addition we are going to expand the Natref oil refinery by 10%, at a cost about R350 million.

Another massive project is the R250 million Alpha Olefins purification facility. This chemical is used mainly as a comonomer in the plastics industry, and for manufacturing high grade synthetic lubricants and biodegradable detergents.

By 1995 South Africa will probably be using lead-free petrol, which opens up another opportunity for Sasol. We will be commissioning a methanol plant from which MTBE is obtained, an important substance in the production of lead-free petrol.

Is Sasol involved with projects in Africa and the rest of the world?

Sasol is exploring for offshore and onshore oil and gas in Africa, but for strategic reasons the exact location must remain confidential. We are also involved in project studies in Zimbabwe, Zambia, Mozambique, Kenya and Madagascar, and we are investigating the rehabilitation of factories in Zambia, Mozambique and Zimbabwe.

As far as the rest of the world is concerned, we are involved in joint ventures in Europe, and are negotiating others in the Far East.

It has been said that most of Africa is an economic "basket case". How do you perceive Africa's future?

There are inherently good people in Africa, but the system has destroyed them. The only way Africa can survive, is to shed its communist and socialist mentality and adopt a free enterprise system.

Incompetent expatriates are being dumped in Africa by their overstaffed parent companies. These expatriates are not motivated to make the locals self-sufficient because this would do them out of a job. Africa was sold a lot of First World standard plants which were not adapted to be operated and maintained by Third World people.

South Africa and Sasol have an important future role to play in modifying those plants, and educating and training the African people to operate them efficiently. PP

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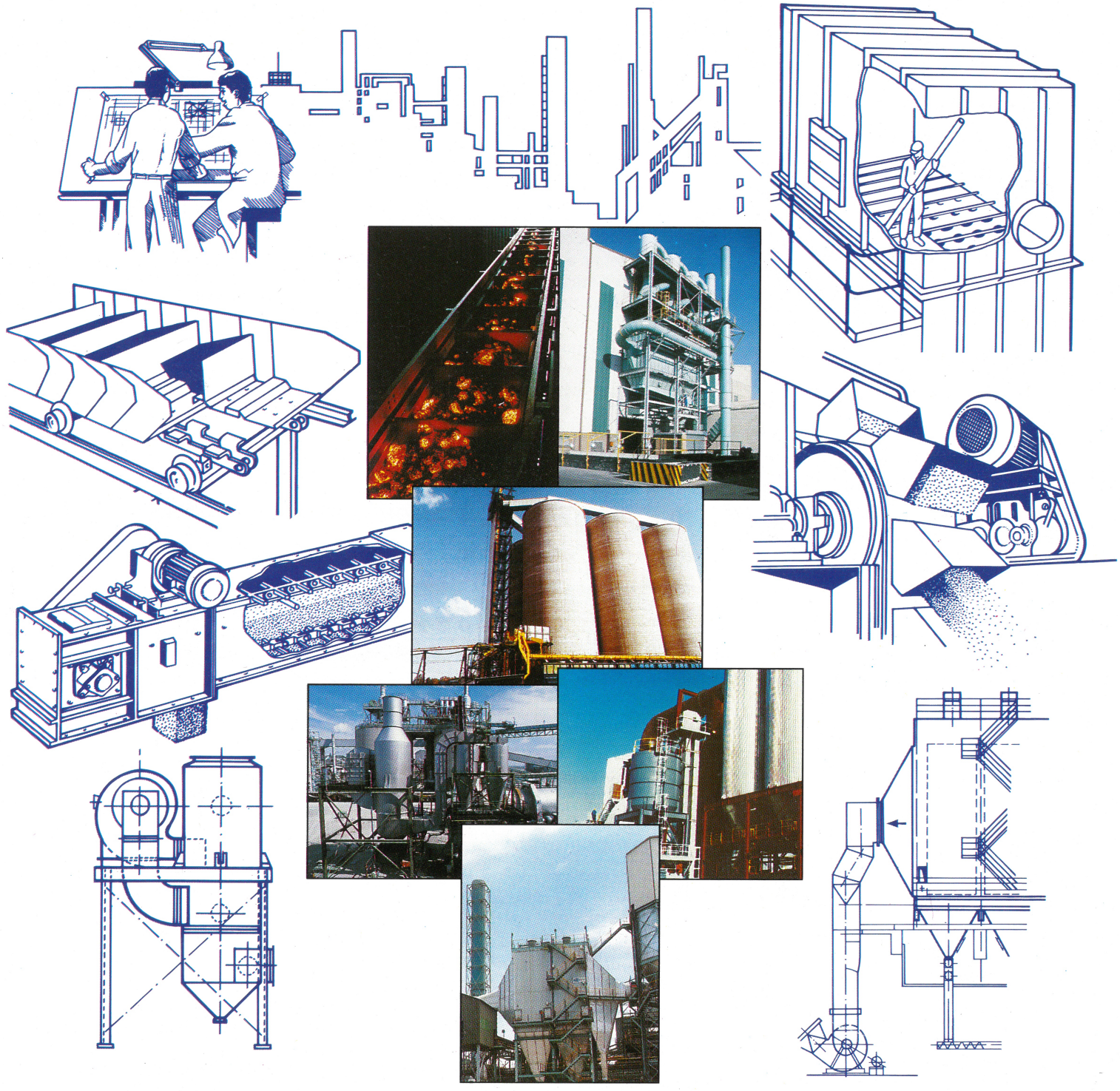

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SODA ASH PROJECT

Winning the Project Management Excellence Award

The R38,6 million Soda Ash Bulk Storage Facility in Natalspruit, Alberton, netted the 1991 Project Management Excellence (PME) Award. This award is made annually by the Project Management Institute (SA Chapter) for a project which has achieved excellence in addressing the eight areas of the Project Management Body of Knowledge, namely:
The management of scope, time, cost, quality, communications, human resources, risk and contract/ procurement.

The project management was executed by the AECI Engineering Department (AED). Said Kaay Koch, a member of the PME adjudication panel, on announcing the award, "The panel was impressed by the excellent use of the work breakdown structure throughout the project. Risk and communication management were also very well handled. In spite of initial delays due to scope definition difficulties, the project was completed on time and with a 10% saving on the budget."

The facility

Soda ash is the common name for the chemical sodium carbonate, which is used in the manufacture of glass, in metallurgical applications and in detergents.

The bulk storage facility is capable of handling the 300 000 tons of soda ash a year that is currently required to serve the inland South African market. The product arrives from Sua Pan, Botswana, in block trains comprising 50 trucks dedicated to soda ash. It is off-loaded into a hopper below ground from where it is conveyed by means of a pipe conveyor to three concrete silos, each with a 7 500 tons capacity.

The complete materials handling system and equipment comprising conveyors, elevators, dust extraction systems from intake to dispatch was designed, engineered and manufactured in-house by ELB-Brandt. Erection and commissioning of the plant was also carried out by ELB-Brandt personnel.

Two conveyor systems move soda ash from the silos to a bulk-load loading facility, or a bagging road/rail loading facility designed to accommodate all types of road and rail transport. From the outset the facility was designed to deal with a wide range of customer demands, having the flexibility to adjust to future trends and increasing logistical demands.

Challenges test the team

The Natalspruit facility was a challenging job for AED in a number of ways. Keith Hutcheson, AED project manager explains, "For the first time AED tendered formally against outside consultants. Normally AED provides a professional engineering service to AECI factories and subsidiaries at pre-determined man-hour rates, with agreed scope of work, specifications, standards and systems for the relevant project".

The programme and budget was extremely tight. During the initial

AECI's Keith Hutcheson, Project Manager (left) and David Milne, Project Controls Manager proudly display the PME Award for their Soda Ash Bulk Storage project.

feasibility investigation, AED assessed that the project could be completed in 15 months. Owing to market pressures, design and construction had to be completed in 11 months and commissioning in one month. A two month's delay was also experienced in obtaining project scope definition and financing, which compressed the programme even further.

AED uses the Open Plan project management system for controlling time and cost. Because of its strength in integrating cost with schedule, to provide the earned value and other cost engineering data, AECI have standardised on this powerful and flexible system.

Construction kicked off when the first concrete was poured in March 1991. In July 1991, with only 11 weeks to go before mechanical completion, the client requested that a minimum saving of R2 million be made on the approved capital of R38,6 million. Not only was AED able to guarantee this, but they also declared that an additional saving of R2 million for the client had been forecasted. This was achieved by tight control of financial commitments during the procurement phase, and further savings were made by virtue of low tender prices due to the recessionary climate.

The facility was subsequently designed, constructed and commissioned in a record time of only six months and 26 days, from first concrete pour to mechanical completion. The activities of 10 contractors, peaking at nearly 300 site personnel, had to be co-ordinated during this tight construction period. This necessitated daily monitoring of progress and pro-active interaction with contractors, such as the negotiation of incentives.

All projects submitted for sanction by the AECI Board of Directors are subject to a detailed Environmental Impact Assessment study. Although the Natalspruit project did not fall within the definition of a conventional AECI project, the client agreed to such a study.

The study provided a further check on AED's process and operational designs for the facility, and on the hazard and operational studies, which involved the client. Most important was the need to measure existing site conditions prior to commissioning. Measurements included dust levels in the air, sodium levels in the Natalspruit stream and background noise levels.

Due to stringent dust control requirements at the rail intake, the hoppers were fitted with patented dust suppression louvre baffles supplied by ELB-Brandt. Dust extraction equipment was also provided at all transfer points and the bag packing stations and telescopic bulk outloading outlet.

Areas of excellence

The PME adjudicators commended AED on their excellent management of the work breakdown structure (WBS), risk and communication. Says David Milne, AED Project Controls Manager, "The WBS was the lingua franca of the project. The budget, schedule, scope definition, communications, reporting and records were all based on the WBS that was rigorously applied throughout the project".

Risk management was executed using @RISK, a Lotus 123 add-on package, which established that a 3,5% estimating contingency would be adequate to provide a 90% probability of the budget being sufficient.

Communicating decisions was vital to the success of this project. The team was expected to record all decisions in writing, even those made during day-to-day telephone conversations, and to send them to all parties.

The project team

The success of the project lies not only in how well the project manager AED performs, but relies heavily on the dedication and expertise of the rest of the project team. The other major players in this project should therefore also be recognised.

The Clients were Soda Ash Botswana (Pty) Ltd and Chemserve Technical Products (Pty) Ltd.

The Consulting Engineers, Jones and Wagener, were entrusted with the civil design of the three bulk storage silos and the piling design for all structures. Bateman Engineering Ltd analysed the flow characteristics of soda ash particles, for the mechanical design of the chutes.

Four construction contractors were involved, namely C A Brand Civil Engineering Company, Girder Naco, Grinaker Dura Piling and ELB-Brandt Contracting,

Competing with the world's best

AED intends to compete with the world's best projects by submitting their Soda Ash Bulk Storage Facility for the PMI International Project of the Year Award for 1992, which was won by a South African project last year. PROJECTPRO wishes them every success, and hope they make it two in a row for SA. PP

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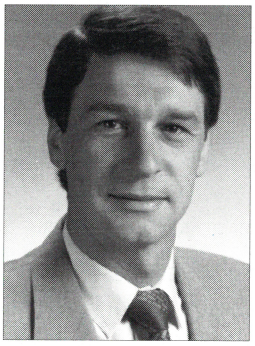
MOSSGAS

NOT ALL DOOM & GLOOM

At a total projected cost of R12 billion, Mossgas is undoubtedly South Africa's largest engineering project, and arguably the most contentious. A recent comment by the Deputy Minister of Finance, Theo Alant that Mossgas was a "bad investment", sparked off a public outcry.



Steve Hrabar

Irrespective of the political and economic implications of Mossgas, one aspect of this project was a shining success - the project management of the offshore development. In December 1991 the Auditor-General issued a report which included an analysis of the project by Maurice Brooks, a distinguished USA consultant, in which he praised the offshore engineering and management aspect of the project. Steve Hrabar, Managing Director of EMSO (Pty) Ltd, reports on the project management of this pioneering project.

A pioneering venture

At the outset there was concern about the offshore development, as this was a pioneering venture for South Africa. The offshore development was managed as a completely separate project from the onshore development, with communication between the two taking place through the Mossgas Project Director.

A feasibility study commenced in January 1985 to determine the suitability, cost, constructability and programme, of a development at the FA gas reservoir, 85 km south of Mosselbay. An overriding feature of the study was to use proven technology, as the client, because of the exposure to risk, was unwilling to be a guinea pig for novel technology.

It was also recognised that work would have to be spread around, particularly in the construction of modules. Contracts were scheduled in unique batches, so as to draw on the available resources of each geographical location. It was originally recommended that the jacket should be constructed in Durban, and the modules in Durban, Port Elizabeth and Cape Town. Richards Bay and Saldanha Bay were also considered.

The total mass of the structure was 14 500 tonnes on completion, the largest steel structure ever built in SA. Initially, no local supplier was prepared to make the grade 50E steel required for the project, but eventually Iscor developed the required grade of steel. An official delegation from the civil engineering contractors to construct the jacket in concrete was studied at length, but rejected due to the poor soil conditions offshore, and on the basis of mass, cost and the size of the structure.

Hostile ocean the Achilles heel?

In March 1986, the conceptual design commenced. An Environmental Impact Assessment Study, involving all interested parties and lead by specialists in chosen fields, was executed for the offshore development.

Sea bed profiling for the pipeline was carried out with the tug Causeway Savor. Whilst on station, a freak swell, measuring twenty-six meters in height and taking about forty seconds to pass, was encountered. This occurrence confirmed that the environmental data could be the Achilles heel of the project.

The offshore development planned to have a template for predrilling so that once the platform and its topsides were in place, production could commence. At that time it was believed that the onshore conversion plant would be ready to accept the product before the offshore development was ready to deliver it.

A fast-track programme would therefore have to be implemented to get the work started as soon as possible, but the Central Energy Fund, through Soekor, was of the opinion that there would have to be phasing of the work to shave the peak off the manpower requirements. This resulted in the offshore project starting before the onshore project.

To give effect to this fast-track programme, a decision was made in January 1987, to proceed with the accommodation module.

Maximise SA content

The conceptual design also addressed the value engineering aspect, by drawing up specifications which would maximise the South African content of materials and equipment. The actual local content turned out to be as high as 70%, mainly due to the plunging value of the Rand, which made SA manufacturers more competitive.

There was no South African legislation or regulations covering offshore installations, so it was recommended that the best of British North Sea regulations, appropriately amended to suit the South African environment, be used.

The budget to complete the offshore project was approved at

R2,179 billion. This included escalation, currency fluctuations and a contingency for growth in the scope of work.

Critical decisions

In March 1987, the project execution phase commenced with the ordering of long-lead items and the signing of contracts. 1987 was a critical year, as it required early decisions to be made, which would influence the success of the project.

- Owing to the process requirements of the onshore conversion plant taking longer than expected, the offshore plant would now be completed earlier than the onshore plant. This prompted the decision to omit the template priorities.
- Owing to the unavailability of lay down areas, the location of the jacket construction site in Durban was not entirely satisfactory. A special survey was then undertaken and Saldanha Bay was chosen as a "greenfields" site for this activity.
- Regular reviews of the programme and costs were implemented, concentrating on an estimate of the outstanding work to alert the project manager and the client of adverse trends. This permitted positive and timely action to take place.

During the project execution stage, there were two significant scope changes. Firstly, the offshore pipeline was laid a year earlier than planned, to prevent the marine spread of the pipelaying barge from interfering with the installation of the jacket and modules.

The second scope change was to include an effluent line for the onshore conversion plant at Vleesbaai and a multi-product pipeline with a single-point mooring buoy at Voorbaai.

World beater

The Mossel Bay offshore project notched up a series of major achievements and world firsts:

The longest vertical piles in the world were fabricated and installed offshore in a single length. The piles were 132 metres long, 2,08 metres in diameter, with an average weight of 500 tonnes.

A world record (to appear in the Guinnes Book of Records) was achieved, for the longest length of 200mm pipe laid in a 24 hour period.

The longest (1000m) directionally drilled beach crossing was made. This was repeated three times to cater for the gas, condensate and effluent pipelines.

The world's first integrated drilling derrick and sub-assembly was engineered, transported and lifted into position in one piece. An electromagnetic lifting and percussive tool was used for the first time to install the vertical piles. This percussive tool was specially designed to prevent pile stick-up problems where the frequency of the wave action was approaching the frequency of the pile.

PM tools & techniques

EMS Limited developed the EMSICS (Engineering Management Services Integrated Control System), using the Artemis project management system that was used throughout the offshore project. EMSICS was on-line to the various sites at Durban, Cape Town, PE, Saldanha Bay, PWV and even Scotland. The project was so large that the computer memory capacity had to be expanded to cope with the vast amount of data to be processed.

The scheduling took cognisance of the fact that this was a pioneering project for SA, so due allowance was made for the learning curve in the programme. In the 1970's, when Britain was embarking on offshore projects, the costs rose by 200% or more and programmes were extended by more than 12 months. For example, jacket construction normally takes 15 months to complete, but EMSO allowed 22 months in their project.

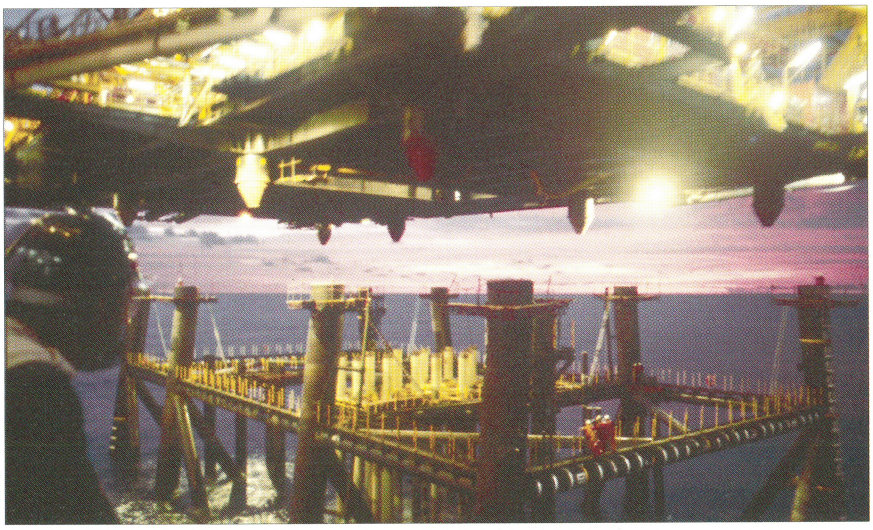
Risk analysis consisted of a thorough operational assessment of what could go wrong and what the implications were of a malfunction of any particular system or piece of equipment.

Handover on target

The project was a resounding project management success, being completed on time and on budget. At handover the budget stood at R2,301 billion, with an unspent contingency of R70 million, resulting in an overspend of 3,26% over the original budget.

The success of the project can be attributed to the classical approach to project management of an offshore development, in particular the methodical approach to scope, time, cost, quality and the work breakdown structure of the project. Constant scanning of industrial environment issues such as manpower, labour relations and industry capability in South Africa was also considered an integral part of the project management role. In fact, an outstanding feature of this project was that there was virtually no down-time due to labour unrest.

The Mossgas Offshore Project has added another dimension to the capability of South Africa's industry. New skills have been imparted to the work force, uplifting their standards of living. It is hoped that when these people move to other industries they will take with them the newly acquired skills and raise the level of quality and productivity so necessary to the new South Africa. PP



The module support frame is lowered onto the jacket as dawn breaks.

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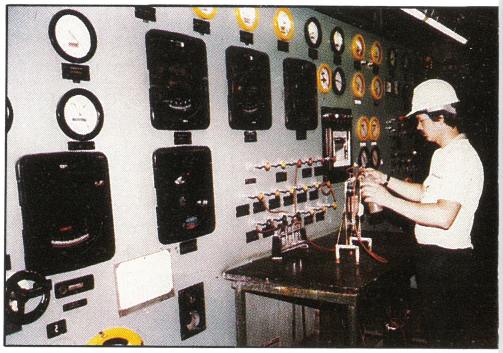

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Software Development

Dr Gary Cort, an international consultant in information management systems, recently visited South Africa as a guest of Gasal Management Systems.
Dr Cort has been involved in large software development projects (SDP) such as the Space Shuttle Mission Simulation and the Los Alamos Neutron Scattering Centre. He graduated with a BSc degree from the Stephen Austin State University, and obtained a PhD from Texas A&M University in 1980.
This article is based on Dr Cort's comprehensive overview of the software development process, presented to the Project Management Institute in Parktown, Johannesburg. Owing to space limitations, ProjectPro has extracted only some of the fascinating points presented.

Dr Cort began by stressing the importance of maintaining control over our software fate, in spite of the fact that this was becoming increasingly difficult to do. This was particularly important on software which formed a "mission critical system", i.e. where the failure could be fatal to human life, or result in a major financial loss.

He went on to say that if we approached a SDP with a sufficiently high level of understanding and commitment, it would not make much difference which methodology we used, as long as we identified the critical issues up front and used the methodology as a framework to get the job done.

Painful lessons

Dr Cort divulged that some very painful lessons were learnt while they were working on the Space Shuttle Simulation project for the Johnson Space Centre in Houston. They had to develop a system to perform high fidelity simulations of absolutely every aspect of the space shuttle missions from launch to touch-down. This system eventually grew to 15 million lines of fortran source code.

He added that they had learned many things the hard way, but he found this advantageous, "The experiences I forget most slowly are the one's that were painful."

Another painful challenge was the real-time data acquisition and control system for a large (0,5 mile long) neutron accelerator with an international user community at the Los Alamos National Laboratory in New Mexico. The demand for the accelerator is so great that users from around the world have to book now for 20 minutes of time in 1996. The resources to operate the accelerator are enormous, costing $150 000 a minute.

However, certain problems would arise. The accelerator, an extremely complex piece of instrumentation, would be operating perfectly, when a software failure in the data acquisition system would make it impossible to complete the experiment, resulting in severe economic, scientific and political ramifications. At one stage, the software failures were responsible for a down-time of up to 90%.

At the time, the software system of about 500 000 lines of code was being developed and maintained by only 7 people because the laboratory could not afford to employ more. The challenge was to get the software system under control without significantly increasing the human resources.

Documentation disasters

"Everyone has their own documentation horror story," says Dr Cort, and warns, "There are major SDP's where the documentation is already hopelessly out of control, even before the software requirements specification has been completed." He feels that in a SDP, documentation should set out the concept formulation from the outset and evolve throughout the process,

It's not a video game

because it is one of the principle products of the software development process.

The organisation of the documentation is critical, because if the dependencies are too complex between modules such as; Interface Description, Software Requirements, Software Design, Verification and Validation, Plans/Procedures, Test Reports, Test Results, etc., then it becomes almost impossible to update them.

Says Dr Cort, "We gave this problem a lot of thought and came up with a revolutionary idea to package the design and maintenance documentation with the source code, so as to make it highly accessible to, and interactive with the people doing the design and maintenance. The development process now starts with source code modules, known as a Documentation Prologue, which is expanded and updated as one proceeds to the next phase. This eliminates the former explosion of unrelated documentation modules."

He also believes that documentation is fundamentally more important than code, "Because coding can be automatically generated by using tools such as Computer Aided Software Engineering (CASE) and we should only start working on the code after having done virtually 100% of the documentation."

Methodologies

There are new and interesting methodologies and a vast amount of technological information that are continuously appearing. Technology should be a tool, it is not and end in itself.

Dr Cort recounted that in the 1960's large scale methodologies which were very effective and successful were pioneered by the US Department of Defence, and that it was not unusual to employ 500 people on a software project. He feels that one can easily take 1% of these people and come up with a decent support staff, but that on a 3 person project, a minimal support staff comprises a significant fraction of the doers. We must therefore take just the effective facets of the large scale development projects and re-cast them into an approach that we can use in a small project environment. The industry is moving in a direction where most future SDP's will be small scale projects with 5 to 20 people.

Quality assurance

"Software quality assurance is in many cases synonymous with bureaucracy" says Dr Cort. "It's the bureaucrat's way of providing a minimal and virtually meaningless audit trail throughout the development process. To rectify this, we must change the notion of quality assurance from an after-the-fact documentation to an up-front proactive mission to ensure that the software does what it is intended to do. In other words, if you have happy users, then you have an excellent quality assurance system."

The Software Engineering Institute of the Carnegie- Mellon University advocates that the processes be measured, but Dr Cort says it can't be done. He claims that the only aspect of the project that can be measured is the output. If the software can pass objective measurement criteria, applied at distinct points of the development life-cycle, then whatever was done to produce that software was right. "Let the quality of the product drive the process, rather than assume that there is some magical process which, if followed religiously, will produce a quality product."

He says that the effectiveness of this approach is borne out by the following case study: A SDP in the USA had a highly proceduralised software quality assurance programme which failed all 17 software audits, even though they were announced three months prior to being carried out; which shows that one can't simply follow a quality flow chart. In this case Dr Cort introduced the objective measurement criteria approach and turned the project around. The software passed three unannounced audits by three separate organisations and there has subsequently not been a single finding against the software.

"If you want your projects to succeed," he advises, "handle the human-intensive side, such as reviews. There is almost nothing more effective than good, solid reviews to avoid failure. Reviews are the forums that determine whether the products are acceptable. They are essential for every stage of the life cycle. Research carried out by IBM shows that at best only 50% of the errors in code can be found by testing, whereas effective reviews can discover up to 95% of the bugs in code."

An independent certification environment in which Verification and Validation (V&V) can be performed, is essential. Dr Cort says that one of the biggest problems with V&V is that it is done within the development environment. "It's amazing how well the software performs within this environment, but it's astounding how often it fails when you introduce it into the real world. There's a recent incident in which a very well known company shipped 40 000 copies of software that would not even compile on the target systems!

This problem would have been easily discovered and remedied if an independent certification environment existed."

Management commitment is crucial. It is unreasonable to expect the developers to put the quality system in place. Quality should be instilled by management, and they should be sufficiently committed to provide the required resources in terms of money, time, training and personnel to support the quality system.

Controlling changes

Dr Cort says that the three most misunderstood words in the entire software business are probably Software Configuration Management (SCM). SCM is the controlling of changes to the baselines of certified software. Version control, back-ups and audit trails have nothing to do with SCM!

Effective SCM requires a secure computer programme library. "If you have a system whereby developers can check in and make changes to software, regardless of whether you record the changes, you do not have a SCM system," says Dr Cort.

Projects succeed because management succeeds. For management to succeed it needs information, but to accumulate information in the SCM process is wasted effort if it never gets sent up to management. In order to avoid failures, information should be collected for decision-making, not for doing post-mortems on failures.

Not a video game

"Software development is not a 'video game' ", asserts Dr Cort. "There are many opportunities for introducing 'video games' into the software development environment, but fundamentally this detracts from the overall process. Automation is a very important second order effect for optimising the overall process, but if you don't have an effective process to begin with, it's just going to increase your overheads."

In conclusion he told the audience about Cort's Law, which summed up most of the things he'd discussed:

Cort's Law states, "All the easy things have already been done... when they were hard."

And there's a corollary to Cort's Law, "If software management is not the hardest thing you've ever done in your life, then you are not doing it right." PP

THE LONGEST SPAN

Straddling the Humber River, on the east coast of England, stands the world's longest single-span suspension bridge, boasting an enormous central span of 1410 metres.

Runners up to the world record holding Humber River Bridge, are the Verranzo Narrows Bridge in New York and the famous Golden Gate Bridge in San Francisco, with spans of 1298 and 1280 metres respectively.

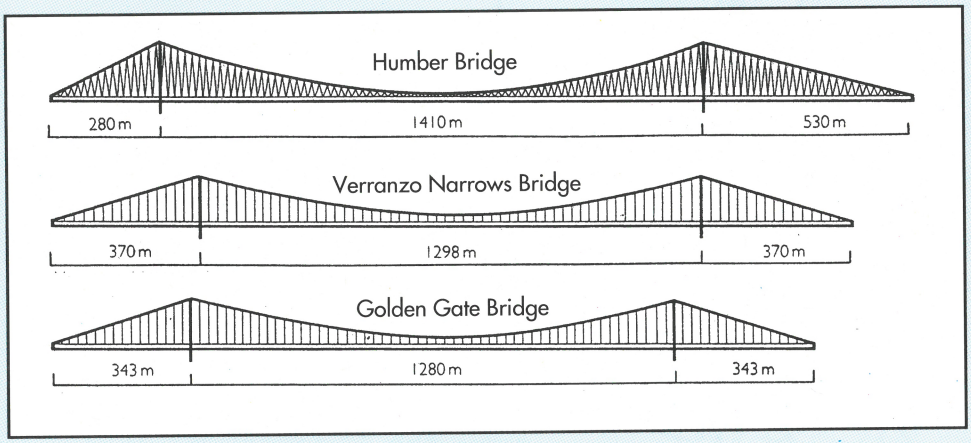
The span of the Humber River Bridge is so great that the designers, Freeman Fox & Partners, had to allow for the curvature of the Earth by specifying that the towers were to be built 36 millimetres out of parallel. The main support cables have a combined mass of 11 200 tonnes of steel, each with a diameter of 690 millimetres, made up from 15 000 individual wires.

Like most projects at the cutting edge of technology, the construction was challenging and problematic. The foundation of the southern tower, constructed some 470 metres into the river, consisted of huge concrete caissons, which were designed to gradually sink into the clayey river bed under their own weight as material was removed from their interiors by means of a grab. Unfortunately underground water was encountered, which washed away the bentonite - a fine clay used as a lubricant between the caisson wall and the in situ ground. To obtain the required penetration into the ground, over 6000 tonnes of steel billets had to be temporarily piled on top of the caisson, incurring extra costs and long delays.

Although the bridge was an engineering and aesthetic success, it turned out to be a financial disaster. The cost was estimated at 28 million pounds when construction commenced in 1972, but by the time it was completed in 1981, the cost including interest on the loan, had soared to 151 million pounds. The projected toll paying traffic volumes never materialised and the debt has risen steadily over the years. The debt is now anticipated to accumulate to 576 million pounds by 1993.

The British government may soon have to write off its loan for the construction of the Humber River Bridge, but this breathtaking monument to engineering skill will remain in the record books for many years to come.

Source: Structures published by The Reader's Digest.



The Humber Bridge differs from its near rivals in several ways. Topography and geology prevented the usual near symmetry of the side span measurements, though the bridge's lengh masks the asymmetry. The use of reinforced concrete rather than steel for the towers had been confined to bridges with spans less than half the size.

RISK MANAGEMENT

A powerful project management tool

Mark Gilfillan

Mark Gilfillan is a senior consultant in project management with Chase Management Consultants. He holds a civil engineering degree from Natal University and has recently completed his MBA degree at Wits Business School.

Most project managers have been either directly involved with, or exposed to, a project horror story. A recent and monumental example of this are certain aspects of the Mossgas project which caused the total cost estimate to increase from R5 billion to R12 billion. Risk management allows the project manager to systematically identify and respond to risks likely to impact on the achievement of a project's time, cost and quality objectives, so that the project manager can avoid becoming a bit player in another horror story.

RISK MANGEMENT PROCESSES

The use of risk management in projects implies the application of specific systematic processes. These processes are:

- Risk identification
- Impact analysis
- Response planning
- A response system
- The application of resulting data.

Risk identification is the determination of risk events that are likely to occur during the project's life cycle. There are a variety of techniques available to identify risk, mostly involving the pooling of project knowledge to develop checklists against which activities are evaluated.

The identified risk events are then analysed to determine the impact of their occurrence, i.e. the probability of specific, or groups of, risk events occurring and the amount at stake. Uncertainty exists when there is no reliable data on which to base the impact analysis, or in other words, when assessments are done on "gut-feel" or guesswork. The techniques used to undertake impact analysis abound, and range from simple qualitative to highly complex quantitative methods. A number of computer packages, some linked to popular planning applications, are available to assist the project manager in this regard. These include Monte Carlo, @RISK, PERK, and Artemis 6000, amongst others.

Having identified the risk and analysed the impact, the project manager should then decide on what response would apply to a specific risk event. Four basic risk responses are available:

- **Mitigation**, i.e., the revision of project objectives to take the risk into account, for example, increasing the project's duration or the cost estimate.
- **Allocation**, i.e., assigning responsibility for the direction of efforts to reduce the occurrence of risk. An example of this could be charging a procurement department with ensuring that a critical item is delivered on time.
- **Deflection**, i.e., redirection of the impact of risk events through, for example, insurance or by contracting out.
- **Contingency planning**, i.e., the establishment of management plans that can be invoked when a risk event occurs, such as implementing alternative work plans or a contingency budget.

Recent research undertaken by the author has indicated that the responses appropriate to specific risk events are related to the level of uncertainty associated with the events. The research consisted of a questionnaire distributed to all members of the South Africa Chapter of the Project Management Institute (PMI). The respondents were asked to assign frequencies of occurrence, phases of occurrence, levels of uncertainty and appropriate responses to a list of risk events. The identified relationships are as follows:

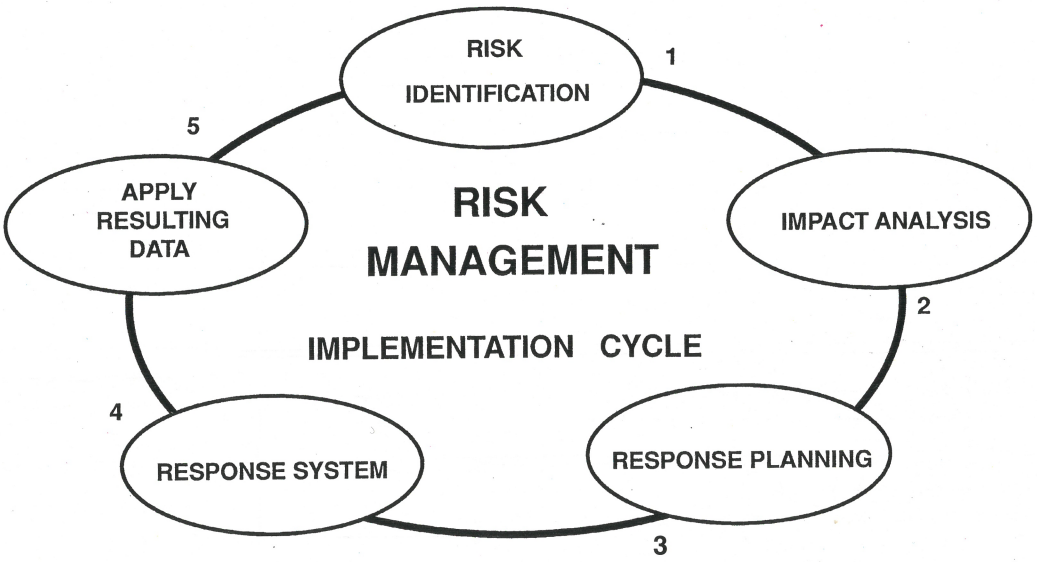
Level of uncertainty	Appropriate response
Very low	Deflection
Low	Allocation
Medium	Contingency
High	Contingency
Very high	Contingency

An interesting aspect highlighted by The research highlighted an interesting aspect... namely that the mitigation response underlies the other three responses, i.e. the revision of project objectives results from the application of deflection, allocation and contingency planning.

The response system constitutes the policies, procedures, goals, responsibilities and organisational structures that are put into place to implement the responses deemed appropriate for each of the identified risk events. The response system must form an integral part of the project organisation, and should be able to adapt to the risk-profile changes likely to be encountered

during a project's life cycle. The system should retain relevant data for use in post-project assessment and in the creation of an historical database to reduce uncertainty in future similar projects.

RISK MANAGEMENT IMPLEMENTATION



The implementation of project risk management has, to date, largely been limited to mega-projects. The emphasis has been primarily on the risk identification and impact analysis processes used in feasibility studies and for cost and time estimates. Recent research by Mr D.W. MacNamara indicated that there is some awareness of risk management amongst South African project managers, though few organisations make formal use of systematic project risk management. The lack of general acceptance of risk management as a valuable project management tool can be ascribed to a concentration of risk management expertise amongst a few practitioners, with little effort being made to expand the skill base or promote understanding.

Implementation of project risk management must begin with risk identification and impact analysis, preferably in the concept or development phase of the project. Either a member of, or a consultant to the project team should possess the skills necessary to co-ordinate and direct these processes. The project team should also be informed of the objectives of the risk management effort, to ensure their co-operation and avoid misperceptions. The implementation of the remaining processes is vital to ensure that the cycle is closed and that the risk management effort does not degenerate into a mere once-off risk analysis.

Implementation costs are obviously project specific and related to the expertise recruited into the project team, the time devoted to the various processes by the project team, and the response system. Indications are that this cost should be in the region of 2% of the total project cost, though little history is available to test this. The benefits of a systematic approach to project risk management must be weighed against this cost.

They are:

- Reduced risk-associated losses.
- Increased reliability of time and cost information.
- Realistic project objectives.
- Greater accuracy of feasibility estimates.
- A clear understanding of project risk profiles.
- More effective management decision making.

CONCLUSION

The acceptance and use of project risk management is probably at the stage that project management was 15 years ago. Whether it develops to the same extent depends upon the understanding that is nurtured amongst those who can benefit from its application. However, project risk management can provide organisations with valuable benefits that could give them the necessary edge to succeed in the highly competitive project management industry.

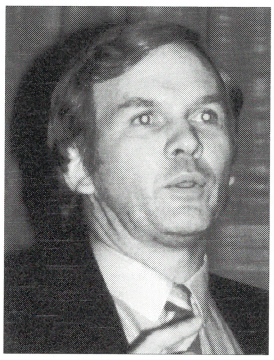
PP

Project Controls OR Project Management?

A project manager (PM) is accountable for the planning, organising, directing and controlling functions to guide a project to successful completion. On large projects, the controlling function can be the responsibility of someone other than the PM, possibly a cost engineer. Sometimes the PM spends too much time on the first three functions, neglecting to properly implement or heed the control function, which can result in disaster.

On 19 November 1991, members of the Project Management Institute (PMI) and the Cost Engineering Association of South Africa (CEASA) met in Johannesburg to discuss the burning question of, 'Project controls or project management – where should the strength be?'.

A panel of six experienced project managers and cost engineers aired their views under the able chairmanship of Ivor Stag-Macey of Bateman Engineering Ltd.



Rod Milne, S A Breweries

"A strong controls person is more critical in achieving project success than the project manager."

Rod Milne believes that although a project might have a strong PM , many projects fail due to a loss of control. "Control should start even before project implementation", he said and then expressed his views on the various weak/strong profiles for the PM / controls (executed by a person other than the PM).

If a project has a strong PM and a strong controls person, conflict can be expected because they both want their own way. Sometimes a strong PM may tend to fiddle the figures as he or she thinks fit, but if the controls person has direct access to the client, this shouldn't happen and the client will know what they are getting into.

A weak PM and weak controls is clearly unacceptable, because there is no focus or direction, which can easily lead to disaster. Mixing a strong PM with weak controls could lead to unpleasant surprises for the client later on in the project.

Milne felt that using a weak PM together with a strong controls person was acceptable. He had known it to be used successfully on projects where there had been constraints on manning levels.

In summing up, Milne said that he was not too concerned about the strength of the PM, but would always opt for a strong and competent controls person.

Wynand Louw, Sasol Ltd

"You should do the one, and not neglect the other."

Wynand Louw stated that controlling is part of project management. Control implies action by people, not systems. In itself the best system in the world will not ensure adequate project control. The emphasis should be on employing competent people, so that the required controls take place through a process of self-control. To control effectively, a control base needs to be created, and this is one of the functions of the project manager.

During project conceptualisation, PM's should strive to foster a climate of innovative thought and creating sufficient divergence to thus obtain the most valuable alternatives. The style of project management must be flexible enough to adapt to the changing needs of the project's life cycle.

Louw also felt that management should be easier on controls in the early phases of a project, and stricter and more rigid during the later phases. In other words, one initially wants a facilitator, and later

on a disciplinarian is needed.

Reg Reynolds, Eskom.

"An aircraft without a pilot is useless, and an aircraft without controls is also useless."

Reg Reynolds felt that project management was analogous to an aircraft and its controls, the one cannot be uncoupled from the other. He believes that the strength should be in the PM. The controls are there for the convenience of the appointed PM, but if he is weak, the controls person or client who steps in to take decisions, effectively becomes the PM.

Although the project controls are passive, they should be able to forecast where the project is going in terms of time and cost. It is the PM who should activate the controls and who is responsible for taking appropriate action.

David Milne, AECI

"The project control function is to provide the instruments with which the PM can navigate the perilous shoals and uncharted reefs of the project."

David Milne observed that project controls are essentially there to indicate to the PM how well he is managing the functions of scope, people, quality, risk, time, budget and communication. He believes that one should not allocate the strength unilaterally to the project management or the project control function, as they should operate as an integrated partnership.

Project controls can only flourish in a strong project management environment. Project controls should analyse the data and tell the PM what the project outcome could be while there is still time to do something about it, because all he can manage is the time that's left over.

Reg Lane, Farrow Laing & Partners

"Control of the budget is the most important project control."

Reg Lane felt that no matter how good the PM was, or how well the time and quality controls were executed, the project would be a disaster if it was based on the wrong budget.

He emphasised that budgets should be controlled, not monitored. An accountant could do the monitoring, but what was needed was a project controller to control the budget and to manage changes.

"The preparation and reporting of the Estimated Final Cost (EFC) should be employed right from the start of the project, as it is one of the most important controls," he said.

Jim Deeley, Eskom.

"The strength shouldn't reside only in project management or only in project control, because control is fundamental to project management."

Jim Deeley strongly believes that for effective control one must have a baseline. The first baseline to prepare is the project brief, which should define the scope, objectives, authority levels, responsibilities, functions, strategies, schedule, budget, and the systems and controls to be used. Management should sign this brief, which serves as an approved baseline for the project.

He suggested a useful mnemonic, POETS, for memorising the elements of the project management process - Planning, Organising, Executing, Tracking and Steering. Tracking is the process of controlling the project against the baseline parameters. Steering is the correcting part of the process, comprising a cycle of input, process, output and feedback, which should take place from an early stage in the project. Firm control should be maintained from the word go.

Deeley was enthusiastic about the use of control tools such as Earned Value Systems and S-curves. He believes that they give a better perspective on the project than simple statements about budget expenditure and progress against the schedule.

He concluded by stating that there should be a particular emphasis on communication as the average PM spends 85% of his time communicating, which is largely a control function.

After the six panel members had aired their views, the audience was invited to participate in the discussion, whereupon a lively and informative debate ensued, for which the panel members, PMI and CEASA are to be congratulated.

We look forward to the next panel discussion in November 1992. PP

Welcome to CEASA

It is with great pleasure that ProjectPro announces the decision of the Executive Committee of the Cost Engineering Association of South Africa (CEASA) to include a subscription to PROJECTPRO in each member's package. CEASA is the Southern African Chapter of the American Association of Cost Engineers (AACE).

It is hoped that through the pages of PROJECTPRO, even better co-operation and communication between CEASA and the rest of the project driven industry will be encouraged. Your news and views are eagerly awaited.

What is cost engineering?

The terms Cost Engineer and Cost Engineering are often not understood by the business and industrial sectors of South Africa.

The term Cost Engineering originated in America and has been defined by the AACE as, "that area of engineering practice where judgement and experience are applied to solve problems of cost estimating, cost control, business planning and management science, profitability analysis, project management, and planning and scheduling".

Despite the feeling that the word "Engineer" is often used rather loosely in America, members of the AACE are required to be graduates of a four-year accredited engineering or related curriculum, and to have relevant experience. Thus we are talking of a field of endeavour which applies engineering and scientific principles and knowledge to the solution of cost and business management problems.

Within the project execution world, Cost Engineers (also known as Project Controls Engineers) are involved in the areas of project planning, scheduling, estimating, cost control and forecasting. Because of their knowledge of the project execution process and the interrelated functions of all the project players, Cost Engineers are often appointed to senior positions in the related areas of systems management, procurement and project management.

The principles developed for successful execution of major capital projects are also effective in diverse areas such as computer software development, new product launches and high intensity maintenance shutdowns. CEASA provides a forum for the dissemination and development of the principles of good control and management of projects throughout Southern Africa.

Further information on CEASA may be obtained from Tony Jervis at tel. (011) 881-1655. PP

Flinton speaks to PMI in Secunda

The Secunda Branch of the Project Management Institute (PMI) held a cheese and wine function on 21 November 1991, at which Mr Dick Flinton, Chairman of Fluor Constructors Inc of the USA, was the guest speaker. Photographed with him are PMI Secunda members (l to r): David Preller, Dick Flinton, Ian Bahlmann, Louis Bruwer and Buck McElroy.

CALENDAR

SOUTHERN AFRICA

12 Mar '92	Project Management Institute – Seminar on the management of cross-border capital development projects – Bellville. Enquire: M Maartens (021) 913-3117.
17-20 Mar '92	Wits University – Course on Project Management in Construction — Presented by Prof Peter Thompson of Manchester University Enquire: Prof Robert McCutcheon Tel (011)716-2690
24-25 Mar '92	Wits University – The Appraisal and Management of Financial Risk in Engineering Projects — Presented by Prof Peter Thompson of Manchester University Enquire: Prof Robert McCutcheon Tel (011)716-2690
6 Apr '92	Advanced Project Management Programme – TUKS Graduate School of Management – Decision Support Systems Enquire: Dr L Smalley Tel (012)343-6273
11-12 Apr '92	International Cost Engineering Council – Half-yearly meeting – Johannesburg. Enquire: Hannes Bredenkamp Tel (011) 832-3211
13-16 Apr '92	CEASA – Cost engineering 2x2 day seminars by James Bent of USA- Johannesburg. Enquire: Tony Jervis Tel (011)881-1655
23 Apr '92	Cost Engineering Assoc. of SA- Members meeting- Johannesburg. Enquire: Tony Jervis Tel (011)881-1655

INTERNATIONAL

1-3 Apr '92	Managment Centre Europe – International human resource management Conference – Paris, France. Enquire: Rue Caroly 15, B-1040 Brussels, Belgium. Fax 5137108.
12-14 Apr '92	American Management Assoc – Human Resources Conference – New Orleans, USA. Enquire (212) 586-8100.
31 May-3 Jun'92	International Federation of Consulting Engineers – Annual Conference – Madrid, Spain. Enquire: FIDIC, P O Box 86, CH-1000 Lausanne 12, Switzerland.
16-19 Jun '92	Internet 11th World Conference- Florence, Italy. Enquire Studio Ambra Poli, Via S Maria alla Porta 1, 20123 Milan, Italy.
19-23 Sep'92	Project Management Institute Seminar/Symposium, Pittsburg, USA. Enquire: Fred Arnold c/o PMI HQ Fax 091-215-622-1796

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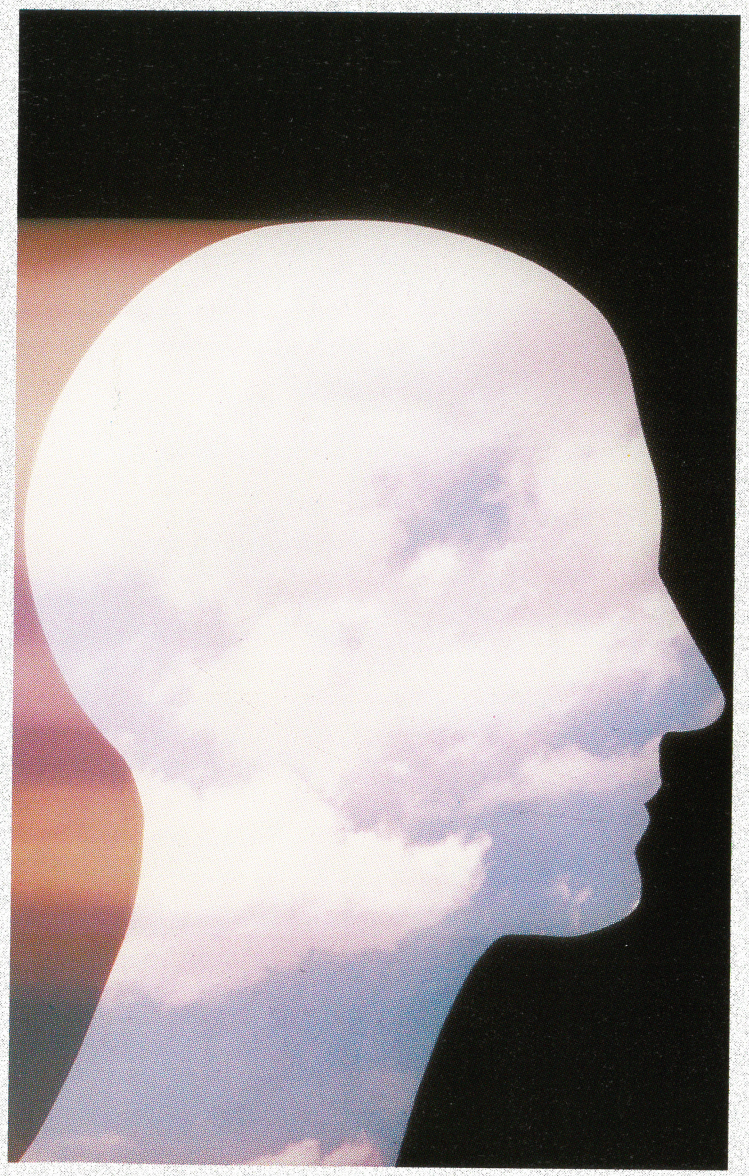

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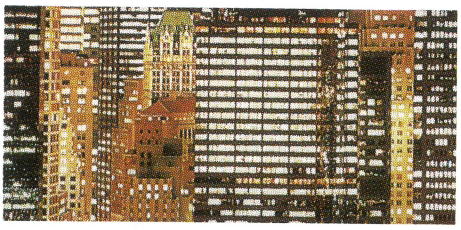

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Project Management today does not only relate to the construction and building industries. It relates to almost all areas of corporate management.

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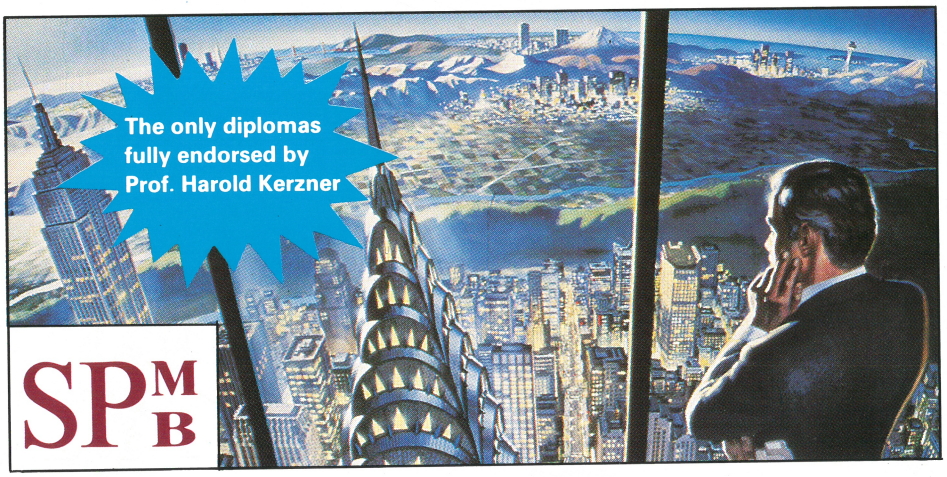
The School of Project Management (SPM) was formed in 1989, to offer quality educational programmes to people interested in a career in Project Management, or furthering their careers. To supplement the course material, use is made of copyrighted videotapes from the successful series entitled "Kerzner on Videotape", produced by the SABC.



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- To focus attention on the management of projects with specific reference to interpersonal skills and conflict resolution modes.
- To familiarise candidates with the tools and techniques associated with the management of projects.

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- Interpersonal skills for project managers
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- Working with executives
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Dates and times

- 21 Jan '92 – 16 May '92
- 17 Mar '92 – 30 June '92
- 9 Jun '92 – 10 Oct '92

Eight lecture-hours per month, except for the fourth month when 16 lecture-hours are provided. These courses can also be done on a distance-learning basis. For details phone the numbers indicated.

In-house option

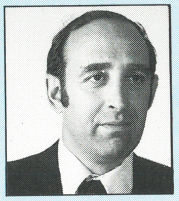
The course can also be done in-house, for which group fees can be negotiated. All candidates who succesfully complete the course will be awarded the Kerzner counter-signed SPM diploma and become eligible for conditional exemption from Module 1 of the Advanced Project Management course offered by the Tuks Graduate School of Management.

Fees and costs

Fee per candidate is R2750. This includes a copy of Kerzner's best-selling textbook on Project Management, plus a file of copyrighted notes.

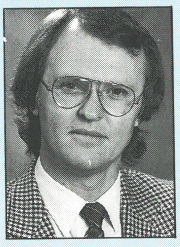
Lecturing Staff

Prof. Harold Kerzner (Ph.D)



Baldwin-Wallace College, Ohio, USA. Prof. Kerzner will participate in the course acting as an external examiner. He also countersigns the diplomas.

Dr Lionel Smalley (D. Comm)



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